Unit 17 Denmore Industrial Estate, Denmore Road, Bridge of Don, Aberdeen AB23 8JW

User Manual
Riser 5 1/8 (1M)
110-2557-HV0

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Revision History

Issue, Release Date	Description
Rev A, 16 Dec 08	Initial Issue

Safety

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force.

All pressure equipment has a particular pressure rating and care must be taken to ensure that no item is used in a situation that may cause its working pressure to be exceeded.

All personnel involved in pressure testing must be formally trained, competent and utilising the appropriate PPE.

Safe Lok devices, where fitted, should be checked for positional security to avoid unnecessary movement of the collar

Ensure the identification band/plate is fitted and is displaying the correct information as per the Tag Sheet/Index

This equipment and the equipment it is attached to is heavy never position yourself below a suspended load

Figure 1 : Riser Safety

1 Introduction

1.1 General

The Phuel Riser (or Lubricator) is a pressure containing cylinder used when performing wireline operations. Its purpose is to allow the wireline tool string to be raised above the wellhead valve allowing entry and exit from the well bore.

The Riser body is constructed in three pieces with a metal-to-metal ACME sealing connection backed by an o-ring. The end connections are Otis type with the Phuel *safe-lok* features incorporated as standard.

This user manual serves as an introduction to the equipment and contains the relevant specifications, operation, planning and maintenance instructions, parts list and drawings.

1.2 Product Identification

Phuel products are identified by a unique serial number that facilitates full product traceability. Each product is supplied with a documentation pack that contains product certification and material/inspection reports. The serial number is always etched on the surface of the product but can sometimes be difficult to find or read after painting.

A stainless steel band secures the nameplate tag that is stamped with the information shown. This tag should be located in the first instance to ensure that this manual refers to the correct equipment. A customer identification number is also included to allow the customer to track the asset in their system.

PHUEL OIL TOOLS LTD
DESCRIPTION & SIZE
CUSTOMER ID No
PHUEL ID No 06-XXX-XX
MWP & SERVICE
TEST DATE

2 Technical Specification

Part No	110-2557-HV0
Connection	9 – 4 Otis Type Connection ½'' NPT
Maximum Working Pressure	10,000 Psi
Test Pressure	15,000 Psi
Service	H2S
Weight	368 lbs
Overall Length (A)	43''
Make Up Length (B)	39.36''
Inner Diameter	5.13''

Table 1 : Technical Data

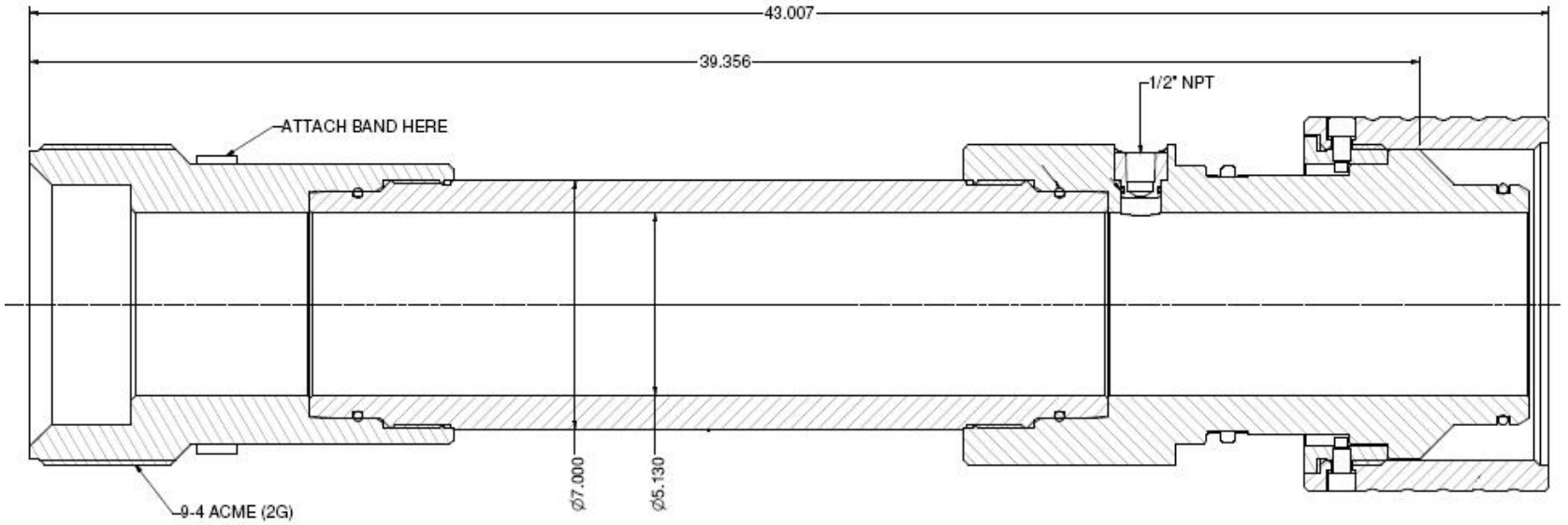

Figure 2 : Riser

3 Technical Description

3.1 Collar Safe-Lok

The safe collar lock is designed to provide safe handling of the union collars. In addition it can be used to prevent accidental back off of the collar. The following shows the sequence for correct operation.

3.1.1 Preparing the Safe-Lok Collar

After removing the thread protector the collar will be set in the lower position and must be moved to the high position before making up the connection.

With both hands raise the collar ensuring the Stop Pins go through the gaps in the raised rim

Rotate the collar through 90° and gently lower onto the raised rim. Ensure collar rests into the grooved area

3.1.2 Making up the Safe-Lok Collar

Lift and stab the pin into the mating box and check that there are no signs of damage to the o-ring (caused by being misaligned while stabbing in).

With both hands raise the collar clear of the grooved area on the raised rim and rotate through 90°. Lower the collar until it reaches the top of the threads. Turn the collar anticlockwise until the start of the thread is found and then start turning clockwise to make up the collar to the box thread. When almost made up fully release the plungers from the locked open position.

Tighten the collar down.

3.1.3 Breaking the Safe-Lok Collar

Unscrew the collar completely

Lift the collar up, ensure the stop pins go through the gaps in the raised rim. Rotate the collar 90° and lower gently so that the pins rest in the grooved portion of the raised rim.

The connection can now be separated without any risk of dropping the collar.

3.2 Test Port Saver Sub

The saver sub provides the ability to change a damaged pressure fitting without repairing or replacing a major component. The saver sub is held in place by two socket head cap screws and is sealed by means of an o-ring.

The Saver sub can be replaced with a blank version (Table 5) to avoid the need to fit a pressure blanking plug that would otherwise protrude from Riser assembly.

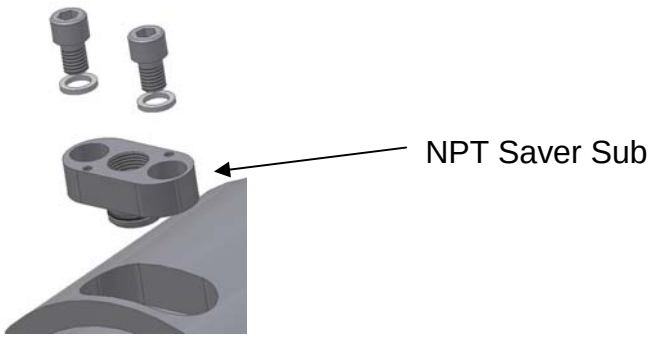

Figure 3 : NPT Saver Sub

4 Operation

All operations to be carried out by suitably qualified and competent personnel

4.1 Lifting

Thread protectors should always be fitted when lifting or moving the riser.

4.1.1 Vertical

The Riser should be lifted with a suitable lifting clamp or cap that is rated for the total lifting load. Following the instructions for the clamp or cap being used.

If practical leave the thread protectors fitted until ready to make up the connections.

4.1.2 Horizontal

Suitable slings can be wrapped around either end of the riser to allow horizontal lifting for means of transportation or fitting. Always pay attention to the centre of gravity and do not continue to lift if the lubricator is not sitting horizontal as it might slip through the slings.

4.2 Making Up the Riser

- With the riser hanging vertically above the mating connection, remove the thread protectors of both ends.
- Set the Safe-lok collar to the high position ready for stabbing in.
- Inspect the o-ring for any signs of damage and apply grease if required
- Inspect the mating bore and thread for any signs of damage or debris and clean and grease if necessary
- Lower the connection and centralise to ensure that the o-ring is not loaded on one side. Ensure that the connection has stabbed fully home and that there are no signs of o-ring debris.
- Release the Safe-lok collar and make up the threads until the Safe-lok engages in the lower groove.
- Store the thread protectors in a safe place for use later.

4.3 Breaking the connection

- Ensure that all pressure is bled off. The free movement of the collar is an indication of this.
- Unscrew the collar fully
- Lift the collar and ensure the Stop Pins pass through the gaps in the raised rim rotate the collar 90° and lower gently into the grooved area

of the rim. Release the weight of the collar and ensure that it is supported correctly.

- Lift up the riser to break the connection. Visually inspect the o-ring and male end to make sure that no damage has occurred. Report if necessary.
- Fit the thread protector to the bottom of the riser at this time to prevent damage when moving. To do this the Safe-Lok collar must be set to the low position. Take care to support the weight of the collar before releasing the plungers.

1. Fit the thread protector to the other thread unless a lifting cap is being used.

4.4 Replacing the Saver Sub

It is not expected that the save sub would need to be replaced during normal operations but if damage occurs to a pressure fitting or a leak is found during pressure testing then this procedure should be followed.

1. Ensure that the pressure is bled off.
2. Do not remove the pressure fittings at this time as they can be used to provide grip to remove the plug.
3. Remove the two socket head cap screws and lock washers. (If they appear unusually tight or difficult to move re-check that the pressure has been removed).
4. Grip the pressure fitting and pull out the saver sub with a pulling and rocking motion. If the pressure fitting has been removed already then two ¼-20 UNC screws (not supplied) can be used to jack out the sub.
5. Inspect the o-ring for signs of damage and replace if necessary
6. Inspect the seal bore for signs of damage and report if necessary
7. If required, remove the pressure fitting – clean and inspect the pressure port.
8. To re-fit the sub apply grease to the o-ring and seal bore.
9. Push the sub into the bore by hand as far as possible, ensuring that the part is centralised in the bore.
10. Fit the screws and washers and tighten to drive the o-ring into the bore. Make up each screw equally to ensure that the sub does not become twisted.
11. Fully tighten the screws.

4.5 Pre Job

- Ensure thread protectors are fitted
- Check maintenance record sheet and ensure the equipment has been maintained by competent personnel
- Check all certification is in date
- Confirm information band is fitted and correct

- Ensure equipment is suitable for the maximum working pressures and services involved
- Ensure ‘O’ ring is seated correctly and there are no signs of damage
- Ensure threads are clean
- Inspect for signs of damage
- Pressure test to 1.2x the maximum well pressure
- Carry out a collar lock test and ensure correct operation
- Ensure all connections are tight and that the test port is tightly fitted

4.6 During Job

- Ensure collar lock has operated correctly and the collar is locked in position
- Avoid excessive movement

4.7 Post Job

- Inspect for signs of damage
- Ensure threads are clean
- Ensure thread protectors are fitted

5 Maintenance

All maintenance to be carried out by suitably qualified and competent personnel

5.1 Introduction

Regular maintenance of the equipment using Phuel redress kits or Phuel approved parts is essential to its continued safe operation. Ensure that the pre and post job operating procedures are followed and that maintenance records are kept.

5.2 Schedule

The maintenance schedule may be governed by international or company standards and the following is considered to be the minimum requirements.

5.2.1 Pre & Post Job

Refer to Section 4.5 and Section 4.7 for details

5.2.2 Yearly

- Disassemble riser (see 5.5.1) clean and degrease all components
- Inspect the condition of all sealing surfaces and surface coatings
- Re-coat threads and sealing surfaces if necessary. If in doubt contact Phuel Oil Tools Ltd
- Replace all elastomeric seals with items from redress kit (see Table 4)
- Regrease components
- Re-assemble (see 5.5.2)
- Pressure test to maximum working pressure in accordance to testing procedure (see 6)
- Inspect paint work and repair as necessary

5.2.3 Five Yearly

- Yearly Maintenance (plus the following)
- Carry out surface NDE on all component threads and damaged surfaces
- Pressure test to maximum working pressure (witnessed by certifying authority where applicable)

5.3 Safety

- Many of the components are heavy and should not be lifted without lifting aids.

- Ensure all pressure testing is carried out in the appropriate testing area by suitably qualified personnel.
- Wear appropriate personal protective equipment.
- Do not over exert yourself while using torque wrenches. Use appropriate mechanical advantages when available.
- Ensure that all tools and equipment are in good condition and are suitable for the intended use.
- Clear up any fluid spills immediately to avoid slips.

5.4 Tools

The following tools are required:

- 2 x Memac Chain Wrench (No3 with 14'' chain)
  Other pipe wrenches may be used but will mark equipment
- 3/8 hex Allen key
- ½'' Spanner
- 7/8'' Spanner (If NPT blank to be fitted)
- 2 x Roller Stands
- Wire Brush

5.5 Redress Procedure

5.5.1 Dis-Assembly

- Place riser on the roller stands
- Remove 4 stop pins and washers from the split collar
- Loosen split rings from collar and remove from split collar. Remove split collar from bottom sub
- Remove 2 screws and washers from test port and remove port from bottom sub
- Loosen and remove bottom sub from riser
- Loosen and remove top sub from riser
- Remove and discard all 'O' rings
- Inspect all threads, degrease and clean with wire brush
- Fit thread protectors

5.5.2 Re-Assembly

- Place the main tube section on the roller stands
- Remove the thread protectors
- Inspect the threads and clean with a wire brush
- Fit 'O' rings to the connection
- Apply grease to the 'O' ring, threads and OD
- Make up the Top Sub and torque to the maximum that can be applied without using additional aids (such as a cheater bar)
- Make up the Bottom Sub and torque to a similar level

- Fit ‘O’ ring to test port, grease and fit to bottom sub using 2 screws (and washers)
- Slide the Split Collar over the bottom sub, make up the two halves of the split ring and tighten down until the ends are flush with the collar. Back off slightly to align the holes
- Insert 4 Stop pins (and washers) to ensure the holes are aligned

5.6 Maintenance Record Sheet

Date Performed	Type of Maintenance	Performed By	Verified By	Comments

Table 2: Maintenance Record

6 Testing

All testing is to be carried out in the designated test area and by suitably qualified and competent personnel.

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force.

- On completion of reassembly fit the appropriate test caps to either end of the riser and NPT plug to test port
- Fill with test fluid and bleed off any air in the system
- Apply a pressure of 500 psi and ensure pressure holds for a minimum of 10 minutes
- Increase pressure to 10,000 psi (Maximum Working Pressure), allow to stabilise and maintain this pressure until it is evident there are no apparent leaks.
- Bleed off pressure, drain test fluid and dry
- Remove test caps and plug
- Apply coating of de-watering solution to protect the bore and threads
- Fit thread protectors

On completion of all maintenance ensure the maintenance record sheet (Para 5.6) is completed

7 Parts List and Drawings

Item Number	Part Number	Quantity	Description
1	110-2556-480	1	RISER TUBE (0.573m X 5.13 BORE)
2	110-2289-480	1	BOTTOM SUB
3	110-2051-480	1	TOP SUB
4	110-2053-480	1	COLLAR 9-4 (SPLIT TYPE)
5	110-2054-480	1	SPLIT RING (9-4)
6	145-2176-480	1	CHECK VALVE PORT
7	110-2329-304	4	STOP PIN
8	WNL-0580-304	4	WASHER NORDLOCK (M12)
9	SHC-0583-3A4	2	Soc Hd Cap Size 1/2 Length 0.75 in
10	801-0119-V90	1	O-Ring - B.S Size 119
11	801-0361-V90	2	O-Ring - B.S Size 361
12	801-0438-V90	1	O-Ring - B.S Size 438
100	910-2155-N66	1	9-4 ACME MALE PROTECTOR
101	910-2156-N66	1	9-4 ACME FEMALE PROTECTOR

Table 3: Parts List (1M)

Note: Thread protectors (items 100 and 101) not shown on Assembly Drawing (Figure 4)

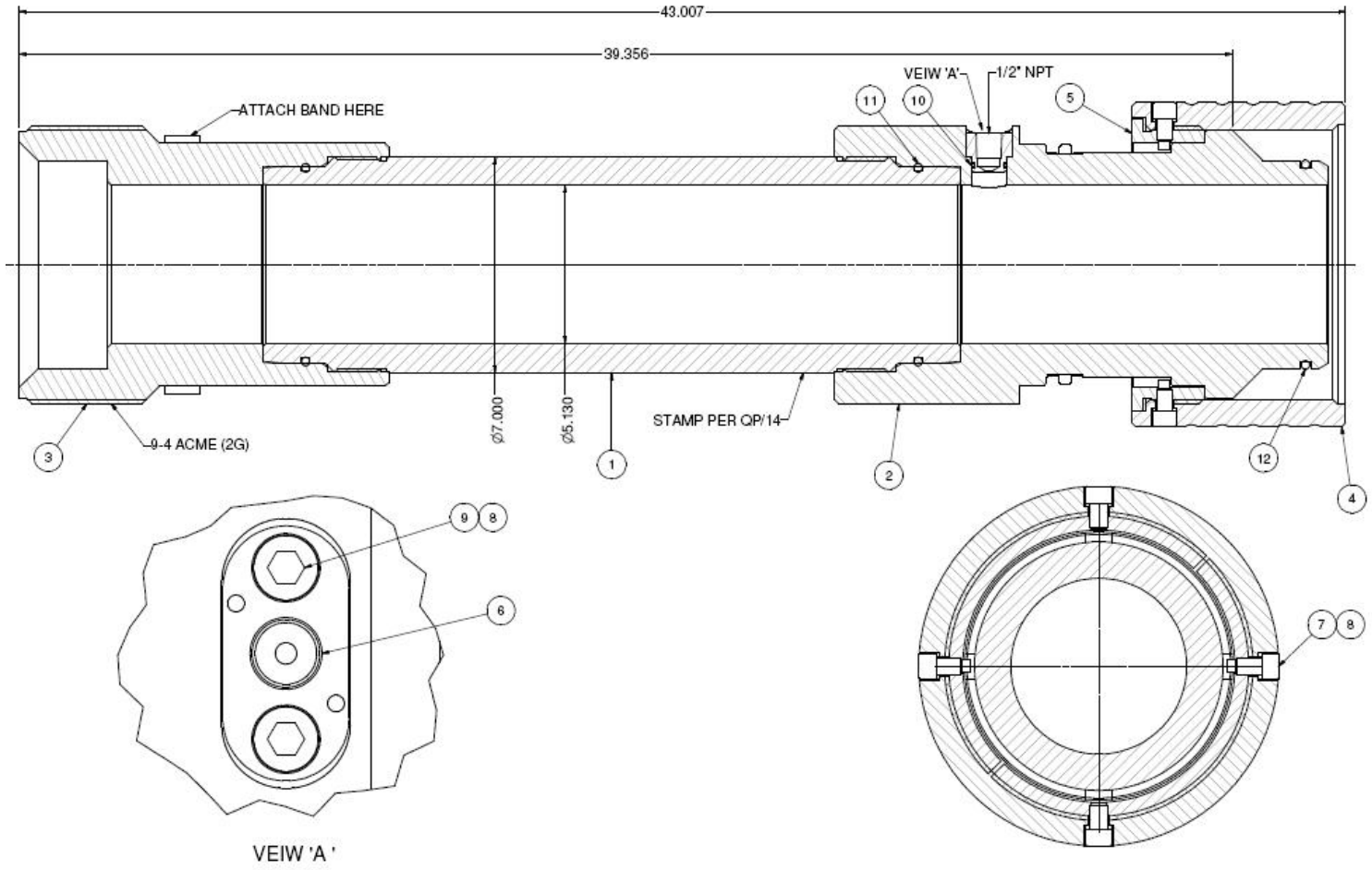

Figure 4 : Assembly Drawing

8 Spares

Use only spares supplied or approved by Phuel Oil Tools Ltd.

It is recommended that sufficient quantities of the following spares be maintained to ensure that the equipment is always available when required.

Elastomeric spares are supplied in Viton material as standard. Many other materials are available please specify when ordering.

Part No	Qty	Description	Comments
801-0119-V90	1	O-Ring - B.S Size 119	
801-0361-V90	2	O-Ring - B.S Size 361	
801-0438-V90	1	O-Ring - B.S Size 438	

Table 4 : Redress Kit Part No RDK-2557-HH0

8.1.1 Individual Items

Individual items may be ordered as required using the part number specified

Note: O-Rings conform to industry standards and may be substituted with those from other suppliers -– **at the sole risk of the user**.

8.1.2 Supporting Equipment

The following support equipment is available for order directly from Phuel Oil Tools Ltd

Part No.	Item Description	Comments
205-2105-480	Blank Test Sub	
111-2493-HV0	Lubricator Manifold Valve	

Table 5 : Supporting Equipment